Danish Care Technology ApS

Energivej 3 · DK-4180 Sorø
Tlf.: +45 5850 0565 · Fax: +45 4696 4646
E-mail: info@danishcare.dk · Web: www.danishcare.dk

File no. EpCa3000 GB Rev. 7-03

User guide

Epi-Care® 3000

Danish Care Technology ApS
www.danishcare.dk

Introduction

Epi-Care® is developed to monitor and alarm in case of epileptic seizures during sleep. Tonic/clonic seizures or similar seizures with repeated motor activity can be detected, whereas quiet seizures or motor seizures with pauses longer than 4-5 seconds per movement can not be detected.

The Epi-Care® device is made for use as well for adults as children. For small children the monitoring depends on the body weight, strength of seizures and type of madras. Contact your distributor for further information.

We have aimed at developing a product that offers the best possible reliability and user-friendliness, however, please note the following:

Do not use Epi-Care® for monitoring patients where human supervision is necessary from a medical point of view.

Please read this user guide as it explains the functions thoroughly giving you full benefit of the Epi-Care® alarm.

Should you need further details, or do you have any questions regarding the product, please contact Danish Care Technology ApS.

It is important for us to deliver quality products based on years' of experience as a supplier of alarm systems to the medical industry.

Danish Care Technology ApS' products are developed according to the requirements of the EMC directive concerning electrical appliances and are CE approved.

Danish Care Technology ApS does not undertake any responsibility for failure in monitoring the epileptic caused by user errors, power failure or any other malfunction of the device.

Epi-Care® is a registered trademark.

Technical Specifications

Technical data for Epi-Care® 3000.

Power supply: Friwo medically approved adaptor.
ID: FW7333M/12
700 mA and 12 V regulated. Max. 8 watt.

Back-up: Built-in 9 V NiMH rechargeable battery

Clock: The internal clock in the Epi-Care® alarm system is powered by a lithium battery – type CR2032

Inputs: 2 pcs. 6 pole RJ11
The vibration sensors can be mounted in sensor plugs S1 and S2

Output: 8 pole RJ45
This port is used for forwarding alarms from the Epi-Care® unit to external equipment e.g. equipment as described in the "Equipment" paragraph on page 14.

- Alarm/relay output: Galvanically isolated relay.
  Accessories for Epi-Care® use the relay to get information on Epi-Care® in alarm mode.
  In this way electrical protection between Epi-Care® and connected units is secured.
  Max. permissible load when the contact is broken is 30 W or 125 VAC.
  Max. permissible current when the contact is broken is 1 A.
  Max. permissible voltage with the contact is broken is 150 VDC or 300 VAC.
  UL rating is given at:
  Max. 1A at 125 VAC
  Max. 1 A at 30 VDC
- Pulse output: Binary signal that is shortly increased when the registration and alarm reports are generated. 12V signal, max. 5 mA.
- 12 VDC output: 12 VDC, max. 100 mA.
  Please note that this DC power supply is shared with the internal 12 V supply on the Epi-Care® unit. Therefore, if this port is overloaded, Epi-Care® will not necessarily function as intended.

Danish Care Technology ApS
Energivej 3 · DK-4180 Sorø · Denmark

Equipment

For the time being following equipment is available for Epi-Care®3000:

- Pager unit with beeper
- Pager unit via telephone or cell phone

Always use pager units for Epi-Care®3000, as the alarm bell of the unit itself is not sufficiently loud to call the person receiving the alarm.

Accessories

Vibration sensor

Epi-Care®3000 can be equipped with 2 vibration sensors.

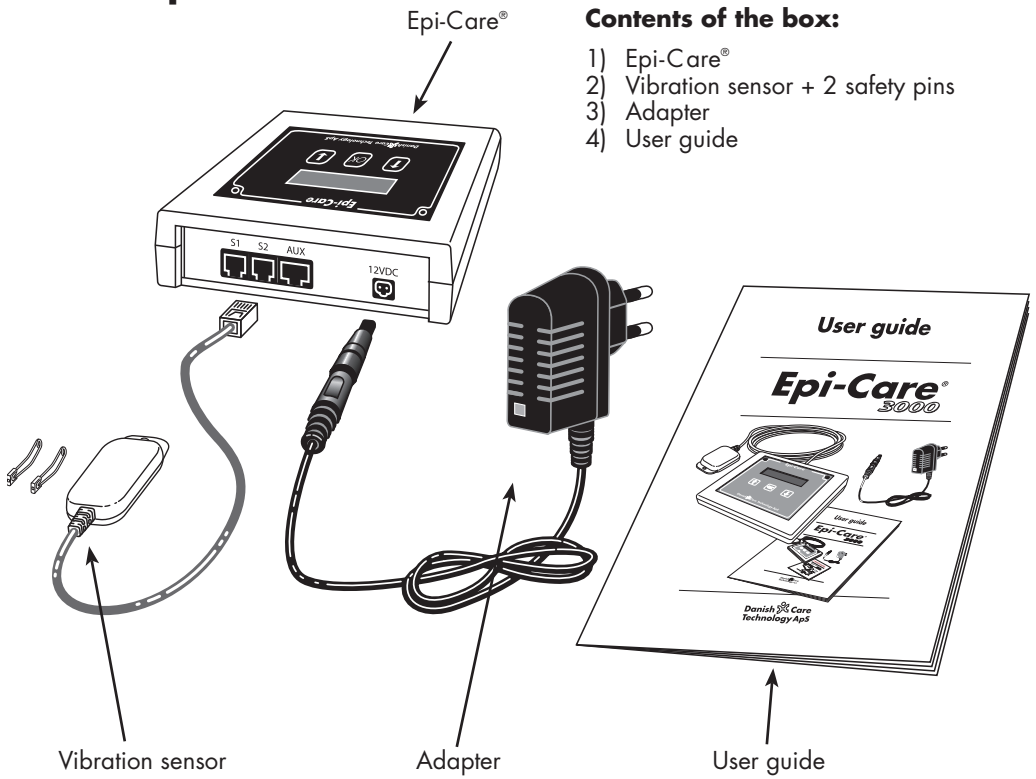
This may be appropriate for small children sleeping in a big bed, or for beds with split mattresses.
When using 2 vibration sensors the unit must be set, see also page 8 **Other Settings**.

Contact your distributor about accessories for your Epi-Care® alarm system or find further information on www.danishcare.dk.

List of Contents

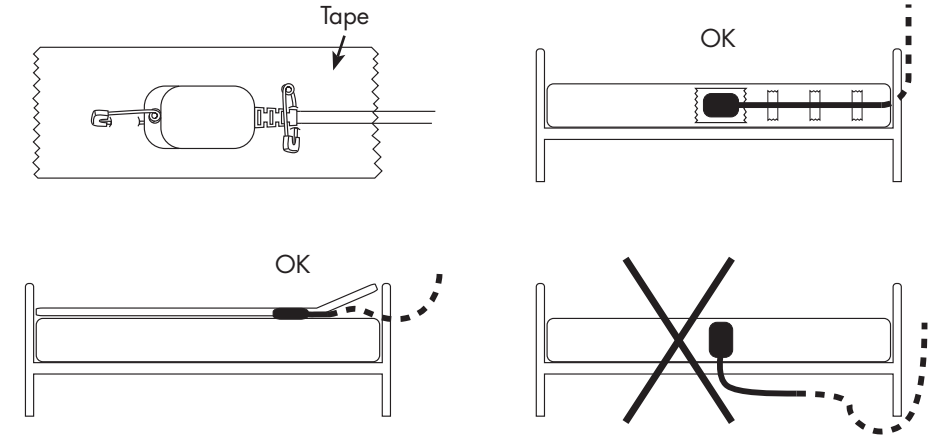
Description 4
Contents of the box 4
Connecting the EPI-Care® System 4-5
Operation 6
Display 6
Keys 6
Main menus 6
Sound signals 6
Light signals 6
Pause function 6
Setting the Alarm 7
Movement Sensor 7
Sensitivity 7
Timer 7
Other Settings 8
Number of sensors 8
Volume 8
Light 8
Clock 8
Reading Reports 9
Alarm report 9
Registration report 9
Pause report 9
Deleting reports 10
EXIT 10
Switching off the alarm 10
Testing the Settings 11
Trouble Shooting 12-13
Security in Connection With Power Failures 12-13
Equipment and Accessories 14
Technical Specifications 15

Description



Contents of the box:

1) Epi-Care®
2) Vibration sensor + 2 safety pins
3) Adapter
4) User guide



Security of the Epi-Care® Unit

The Epi-Care® unit is developed with a view to obtaining the largest possible security for the user and ensuring that errors, if any, are detected immediately.
The unit performs self-control during start-up and during operation.
If an error is detected in the unit, a constant sound will be emitted, LED 1 will emit a red light and the text "Error" will appear in the display.
See below diagram for trouble shooting.

Display text	Sound / LED 1 / LED 2	Reason / error
"ERROR: 0x 1000"	Constant sound/ Constant red light/ Constant green light	Sensor error. The connected vibration sensor is defective and must be repaired or replaced.
"ERROR: 0x0001", "ERROR: 0x0002", "ERROR: 0x0004", "ERROR: 0x0008", "ERROR: 0x0010", "ERROR: 0x0020", "ERROR: 0x0040", "ERROR: 0x0100" or "ERROR: 0x0200"	Constant sound / Constant red light / Constant green light	Epi-Care® error. An internal error has been detected in EPI-Care and it must be repaired.
"ERROR: 0x0080"	Constant sound / Constant red light / Constant green light	CR2032 battery error. The battery is flat and must be replaced. Epi-Care® must be repaired
"POWER FAILURE CLOSING DOWN"	LED 1 emits red light Constant sound	No 200 V mains supply, continues for approx. 8 sec.
"BATTERY ERROR PRESS UP AND DOWN"	LED 1 emits red light LED 2 emits red light Constant sound	The internal back-up battery must be charged or replaced. Leave the unit for 10 hours with the power supply on.

Security in Connection with Power Failures

The unit is mains supplied. If the mains supply fails the Epi-Care® unit will continue to function for some seconds by means of an integral battery, and it will go into alarm mode before being disconnected.
Therefore, the person receiving the alarm will usually be warned if the unit stops due to power failures.

Epi-Care®s net adapter is carefully selected according to best possible security. Therefore, never use an adapter other than the one delivered together with this unit.

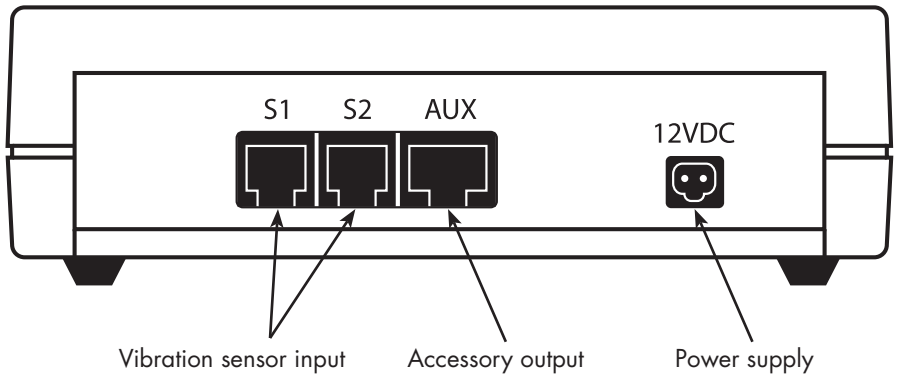
Clean the Epi-Care® unit with a damp cloth with some spirit, if necessary.
Never expose the Epi-Care® unit to water or other fluids – always treat it carefully.

Trouble Shooting

In the following typical errors and how to solve them are described:

PROBLEM	DISPLAY TEXT	SETTINGS	SOLUTION
Error message: Fast beep sounds LED 1 is off LED 2 is red	Sensor missing	Set at 1 sensor 1 sensor is connected	Sensor error The sensor is defective and must be replaced
Error message: Fast beep sounds LED 1 is off LED 2 is red	Sensor missing	Set at 1 sensor No sensor is connected	User error Connect the vibration sensor to Epi-Care®
Error message: Fast beep sounds LED 1 is off LED 2 is red	Sensor missing	Set at 2 sensors 2 sensors are connected	Sensor error A sensor is defective and must be replaced
Error message: Fast beep sounds LED 1 is off LED 2 is red	Sensor missing	Set at 2 sensors 1 sensor is connected	User error Mount an extra sensor or set the unit at 1 sensor
Error message: Fast beep sounds LED 1 is off LED 2 is red	Too many sensors	Set at 1 sensor 2 sensors are connected	User error Set the unit at 2 sensors
Not all seizures are detected	—	Check that the sensitivity and timer settings are optimal. See the paragraph "Testing the settings"	Test higher sensitivity and/or shorter alarm period, and test if the sensor is correctly fasten to the mattress
Alarms are triggered even though there are no seizures	—	Check that the sensitivity and timer settings are optimal. See the paragraph "Testing the settings"	Perform a test with longer alarm period and/or lower sensitivity
The Epi-Care® unit alarms but the call is not forwarded	—	—	See the user's instruction for alarm equipment

Connecting the Epi-Care® System



Connect the vibration sensor to the vibration sensor input S1 or S2 of the Epi-Care® unit.

Fasten the vibration sensor to the mattress (see below)

Connect external accessories to the AUX-output of the Epi-Care® unit.
See **Accessories** on page 14

Connect the power supply cable to the Epi-Care® unit.
Then plug the adapter into the wall outlet.

Epi-Care® is now ready for use.

However, you may adjust the Sensitivity, Alarm and Timer criteria depending on the age, weight, intensity/length of the seizures.

See the paragraph **Setting the Alarm** on page 7.

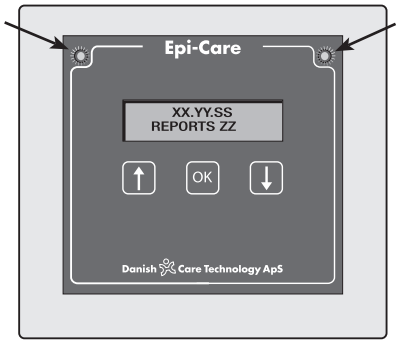
Placing the vibration sensor
Fasten the vibration sensor to the mattress so that it follows the movements of the mattress. The optimal position depends on the type of bed, the mattress, the person's weight and the intensity of seizures. Normally, the vibration sensor should be placed close to the person's tremor point and in a way that it is not pushed away during a seizure. E.g. the sensor can be placed on the side of the mattress.

The enclosed safety pins may be used to test the sensor's optimal position for registration of vibrations.

When the optimal placing has been found, we recommend to fasten the sensor further by using a strong tape and to fasten the cord. If possible, place the sensor and cord under the sheet to avoid the risk of the person pulling the cord during a seizure.

Note: The sensor must be secured to the mattress to ensure that the alarm system detects the seizures

Operation



Display

When the Epi-Care® unit is in monitoring mode the display shows actual time and the first main menu point REPORTS as well as the number of reports stored.

```
XX.YY.SS
REPORTS ZZ
```

XX:YY:S Hours/minutes/seconds
ZZ: The number of reports stored in the memory

The display is designed as a scroll text with main menus. You scroll through the menus by using the 2 arrow keys on the Epi-Care® unit.

Keys

Epi-Care® is simple to operate by means of the arrow keys and the OK key.

By using the arrow keys you scroll through the menus, and the OK key is used for entering into the menues and for accepting the settings.

Main menus

REPORTS - Here all stored incidents can be viewed..... Page 9
VIBRATION SENSOR - Here the vibration sensor settings can be changed..Page 7
OTHER SETTINGS - Access to a sub-menu of settings: Number of sensors, volume, intensity of light and clock..... Page 8
DELETE REPORTS - Delete stored reports ..... Page 10
EXIT - Return to the main menu ..... Page 11

Sound signals

Epi-Care® is equipped with 3 built-in sound signals:

1. Slow beeping indicates that Epi-Care® has registered a seizure
2. Constant sound indicates critical error on the Epi-Care® unit. Contact your Epi-Care® distributor
3. Fast beeping indicates that a sensor lacks or that too many sensors have been mounted

Light signals	**LED 1**	**LED 2**
Monitoring mode	Off	Constant green
Movement detected	Off	Flashing green/red
Seizure detected or sensor error	Off	Constant red
Error	Constant red	

Epi-Care® returns to monitoring mode after 20 seconds, if the keys have not been activated.

Pause function

Epi-Care® can be put into pause mode. This gives you the time to put clean sheets on the bed. Activate the pause function by pressing the OK key for 5 sec. Epi-Care® returns to normal mode after approx. 10 min, or when activating one of the keys.

Testing the Settings

For setting the Epi-Care® alarm system you must set the sensitivity level and the timer for both ALARM (Registration with alarm) and REGISTRATION (Registration without alarm).

1) Place the vibration sensor on the mattress e.g. under the sheet on the side of the mattress.
2) Connect the power supply on the Epi-Care® alarm system and connect the pager unit, if needed. LED 2 on the Epi-Care® unit then emits a green light. Set the TIMER at a period of e.g. 60 seconds or more to avoid activating the alarm mode when setting the SENSITIVITY.
3) Tap gently on the mattress either with your finger or hand to simulate a seizure. The light indicator will flash green and red as long as the sensitivity level selected can register a movement in the mattress.
4) Set SENSITIVITY at the desired level and repeat step 3, until the alarm is triggered.
5) Set TIMER at the desired time and repeat step 3, if necessary, until the alarm is triggered.
6) Switch the alarm bell off by pressing both arrow keys at the same time.

Suggestions for daily routines

Switch off the power supply during the daytime and when you are making the bed, thus avoiding unwanted reports and alarms.

Epi-Care® memorizes the registered settings and reports, even though you switch off the power supply.

You might put the unit in pause mode while making the bed or if you – for one reason or another – need to put the monitoring on hold.

See also the paragraph **Operation** on page 6.

Deleting Reports

In this main menu reports may be deleted.
The reports are not deleted until the deletion is confirmed.

Select the menu item ***DELETE REPORTS***.

You may select between ***YES*** or ***NO***.
If you reply ***YES***, all reports are deleted, if not, they will remain in the memory.

EXIT

This function returns to supervision mode.

Switching Off the Alarm Bell

In case of an alarm the built-in alarm bell is activated and LED 2 will emit red light constantly. The alarm bell and LED 2 can only be switched off on the Epi-Care® alarm system.

Press both arrow keys at the same time.

You can reply either ***YES*** or ***NO***.
If you reply ***YES***, the alarm bell is immediately disconnected, otherwise it continues.

Setting the Alarm

In the main menu ***VIBRATION SENSOR*** , timer and sensitivity to vibrations are set.

Sensitivity

Select the menu item ***VIBRATION SENSOR → SENSITIVITY***

In order to distinguish between natural vibrations caused by a sleeping person and vibrations caused by an epileptic seizure Epi-Care® offers the possibility of adjusting the sensitivity.

Set the sensitivity level by choosing a number between 0 and 10, where 10 is the most sensitive setting.

Confirm the setting by pressing OK.

0 = least sensitive / 10 = most sensitive.

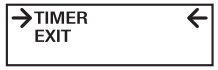
If the alarm system is equipped with 2 vibration sensors, the sensitivity level chosen will apply for both sensors.

Timer

Select the menu item ***VIBRATION SENSOR → TIMER***

Here you define how many seconds a vibration period can last, before an alarm is triggered. Select the number of seconds by using the arrow keys and confirm by clicking OK.

If you set the ***ALARM TIMER*** to 20 seconds, all vibrations in a period up to 19 seconds will not trigger an alarm. However, if the movements last for 20 seconds or longer an alarm will be triggered.



Coding options: 1 – 99 seconds.

It is also possible to register short vibration periods without triggering an alarm. This is done by setting the ***REG. TIMER***.

Select the required number of seconds (must be less than the selected alarm period) and confirm by pressing OK.

ALARM TIMER = the number of seconds a movement lasts before an alarm is triggered

REG. TIMER = the number of seconds a movement lasts.
The period must be registered, but without triggering an alarm.

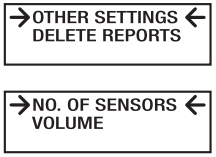
See also **Switching off the Alarm Bell** on page 10.

Other Settings

In the main menu item ***OTHER SETTINGS***, the sub-menu items ***NUMBER OF SENSORS, VOLUME, LIGHT***, and ***CLOCK*** are set.

1. Number of sensors

Select menu item ***OTHER SETTINGS → NO. OF SENSORS***



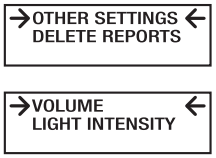
Here you select how many sensors should be connected to Epi-Care®. It is possible to connect two sensors.
From the factory Epi-Care® is set at 1 sensor.

Use the arrow keys to change the setting.

Press OK to accept.

2. Volume

Select the menu item ***OTHER SETTINGS → VOLUME***



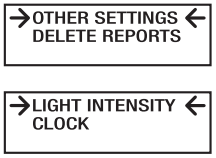
Epi-Care® is equipped with an internal buzzer (alarm bell) with four volume levels.

Use the arrow keys to set the volume between 1 and 4, with 1 indicating the lowest volume.

Press OK to accept.

3. Light

Select the menu item ***OTHER SETTINGS → LIGHT***



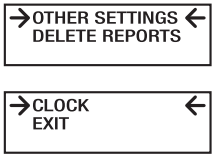
In Epi-Care® it is possible to adjust the display light.

Use the arrow keys between 1 and 4 to set the light , where 1 indicates that the alarm system is disconnected.

Press OK to accept.

4. Clock

Select menu item ***OTHER SETTINGS → CLOCK***



Date and time are set by using the arrow keys.

Press OK to accept.

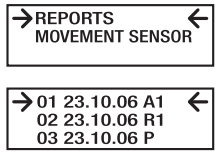
REMEMBER: If the entries are not accepted by pressing OK after each setting, the changes will not be stored.

Reading Reports

Reports

In the main menu item ***REPORTS*** Epi-Care® stores 3 types of reports: ***ALARM, REGISTRATION*** and ***PAUSE***. The reports contain information on report type, starting and ending time as well as sensitivity.

Select the menu item ***REPORTS***



A list of reports stored in Epi-Care® is shown. By activating the arrow keys you move through the list of reports.

Press OK to view the contents of the report chosen.

If there are no reports in Epi-Care®, only the menu item ***EXIT*** is shown.

To view the contents of a report, you move through the various information by using the arrow keys.

Exit ***REPORTS*** by pressing OK.

Alarm report

E.g. this function is used to register vibrations, which might result from a seizure requiring assistance.

Epi-Care® Text Display		*Description*
SENSOR	1 ALARM	Alarm on input S1 and alarm type
START:	12:30:06	Starting time
END:	12:30:36	Ending time
DATE:	06.07.03	Date for the alarm. Year/month/day
SENSITIVITY:	07	Least registered sensitivity. Large enough to trigger an alarm

Registration report

E.g. this function is used to register vibrations of a short duration, which might be small seizures which do not require assistance.

Epi-Care® Text Display		*Description*
SENSOR 1 REG.		Registration on input S1 or S2 and registration type
START:	12:39:03	Starting time
END:	12:40:12	Ending time
DATE:	06.07.03	Date for the registration

Pause report

Epi-Care® registers how many times the pause function has been activated.

Epi-Care® Text Display		*Description*
PAUSE		Indicates that a pause mode has been registered
START:	12:30:06	Starting time for pause mode
END:	12:30:36	Ending time pause mode
DATE:	06.07.03	Shows date